Appendix A: Technical Notes

Data Sources

Behavioral Risk Factor Surveillance System (BRFSS): BRFSS is a national telephone survey of adults 18 and over who live in households with telephones. BRFSS monitors modifiable risk factors for chronic diseases and other leading causes of death, including nutrition, exercise, tobacco use, injury control, and use of preventive services as well as knowledge and attitudes, demographics, general health status, and access to health care. Topics vary by year as well as whether they are core CDC topics or state-added modules. Households are randomly selected to be called and then, once reached, one adult from the household is randomly selected to be interviewed. Data are not available at the county level. [Counties oversampled in 2003 and 2004] The Washington State BRFSS website is http://www.doh.wa.gov/EHSPHL/CHS/CHS-Data/BRFSS/BRFSS_homepage.htm
The CDC BRFSS website is http://www.cdc.gov/brfss/

Birth Certificates: Birth certificates are completed for all births that occur in Washington State. Births that occur to Washington residents in other states are added to the data files. Data presented in this report reflect information on Washington residents whether they delivered in WA or elsewhere. Information collected includes maternal and paternal demographics, delivery information, medical risks of the mother and selected morbidity of the newborn. For more information about data collected on the Washington State Birth Certificate, see the website http://www.doh.wa.gov/ehsphl/chs/chs-data/birth/bir_main.htm

Information on all births in the United States is collected and reported by the National Center for Health Statistics. Documentation, statistics and reports are available at www.cdc.gov/nchs/births.htm

Comprehensive Hospital Abstract Reporting System (CHARS): The Comprehensive Hospital Abstract Reporting System is a database maintained by the Center for Health Statistics with inpatient hospital discharge information for all patients treated in state-licensed acute care hospitals in Washington from 1987-2004, regardless of patient residence. A hospital is defined as any health care institution that is required to qualify for a license under RCW 70.41.020. CHARS does not cover private alcoholism hospitals, no-fee hospitals, US military hospitals, US Veterans Administration (VA) hospitals, or Washington State psychiatric hospitals. Data on Washington residents hospitalized in Oregon are obtained through the Oregon Hospital Discharge Data (OHDD). However, hospitalization data are not available for Washington residents hospitalized in other states, and OHDD cannot always be combined with CHARS, as for example, when one wants to count individuals and not hospitalizations. This situation affects border counties, especially those adjacent to larger population centers in other states. Asotin and Garfield counties are particularly affected by hospitalization in Idaho. Up to 9 hospital discharge diagnoses are recorded using the ninth revision of the International Classification of Disease diagnosis codes (ICD-9). Additional information is available at http://www.doh.wa.gov/EHSPHL/hospdata/

Current Population Survey (CPS): CPS is a monthly household survey of the non-institutional civilian population in the United States. Most of the information collected is on unemployment and the labor force (including employment benefits, such as health insurance coverage). Supplemental questions related to health have also been asked including tobacco use, fertility, and food security. The CPS Website is http://www.bls.census.gov/cps/cpsmain.htm

Death Certificates: Death certificates are completed for all deaths that occur in Washington State. In addition, deaths to Washington residents that occur out of state are added to the data files. Data presented in this report reflect Washington residents whether they died in Washington or not. Death certificate information includes demographics, characteristics of the death and causes of death. The causes of deaths reported here are classified based on the International Classification of Diseases, Tenth Revision (ICD-10) published by the World Health Organization. Information on this classification as well as continuity with the previous revision is available in the Vital Statistics Technical Note at www.doh.wa.gov/ehsphl/chs/chs-data/TechNote/Tech_not.pdf Additional information about data collected on the Washington State Death Certificate is available at: http://www.doh.wa.gov/EHSPHL/CHS/CHS-Data/death/deatmain.htm

Information on all deaths in the United States is collected and reported by the National Center for Health Statistics. Documentation, statistics and reports are available at http://www.cdc.gov/nchs/deaths.htm

Information on infant deaths in this report come from a data file that links deaths to infants less than 365 days old to birth certificates. This linkage provides maternal demographics, maternal pregnancy information and birth characteristics for the infant.

Fetal Death Certificates: Fetal Death certificates are completed for all fetal deaths of 20 weeks gestation or more that occur in Washington State. Fetal deaths that occur to Washington residents in other states are added to the data files. Information collected on the fetal death certificate includes maternal and paternal demographics, causes of fetal death, delivery information, pregnancy risks and selected morbidity of the mother, and congenital anomalies of the fetus. For more information about data collected on the Washington State Fetal Death Certificate, see the website http://www.doh.wa.gov/ehsphl/chs/chs-data/fetdeath/fd_main.htm

Information on all fetal deaths in the United States is collected and reported by the National Center for Health Statistics. Documentation, statistics and reports are available at http://www.cdc.gov/nchs/about/major/fetaldth/abfetal.htm

First Steps Database: The First Steps Database (FSDB), housed in Research and Data Analysis, Department of Social and Health Services, was created to assist in the evaluation of the First Steps Program. The First Steps Program helps low-income pregnant women get the health and social services they need. The FSDB performs an annual individual-level linkage of Medicaid claims and eligibility data with birth and death certificates. Medicaid women are defined by FSDB as women who received Medicaid-paid prenatal care and/or delivery services or who were enrolled in a Medicaid managed care plan for at least 3 of the last 6 months before delivery. (See Medicaid Status under Technical Notes and Definitions below for additional information on the classification of women on Medicaid used in this report). Documentation, statistics and reports are available at http://fortress.wa.gov/dshs/maa/FirstSteps/FSDB.htm

Genetics Minimum Data Set: The Genetics Minimum Data Set is maintained by the Genetics Program at the Office of Maternal and Child Health. The dataset includes genetic service utilization data for all regional genetic clinics in Washington with information on the demographics of the population served.

Healthy People 2010 Objectives: Healthy People 2010 provides national health objectives for a number of health outcomes to be achieved by 2010. Documentation, baseline data and objectives can be found at http://www.healthypeople.gov/document/

Healthy Youth Survey: The Healthy Youth Survey (HYS) is a collaborative effort of the Office of the Superintendent of Public Instruction, the Department of Health, the Department of Social and Health Service's Division of Alcohol and Substance Abuse, and the Department of Community, Trade and Economic Development. Data on youth substance use and other health behaviors are needed to support planning and evaluation of science-based prevention and health promotion programs. Historically, numerous surveys were administered by different groups (See description of Survey of Adolescent Health Behaviors and the Youth Risk Behavior Survey). The Healthy Youth Survey was developed to better coordinate survey efforts and minimize the burden on schools. HYS was first administered in October 2002, and will now be administered every two years in the fall. It provides information about adolescents in grades 6, 8, 10 and 12 in public schools in Washington. Schools are randomly sampled and all students in the surveyed grades are asked to respond to the questionnaire. Topics include safety and violence, physical activity and diet, alcohol, tobacco and other drug use, and related risk and protective factors. Documentation and state level data are available at: http://www3.doh.wa.gov/HYS/

National Immunization Survey: The National Immunization Survey is an ongoing telephone survey of a random sample of households screened to determine whether an infant 19-35 months lives there. The adult most knowledgeable about the infant's health is surveyed to provide demographic information and to identify the provider(s) of immunizations. A mailed survey is sent to the providers for immunization history. The survey is conducted by the National Immunization Program and National Center for Health Statistics at the Centers for Disease Control and Prevention. The survey uses the state and local area integrated telephone survey (SLAITS) methodology. State level immunization rates are available. Documentation and reports are available at http://www.cdc.gov/nis

National Survey of Children's Health: The National Survey of Children's Health was a telephone survey of a random sample of households with children less than 18 conducted from January 2003-July 2004. One child from the household was randomly selected to be the subject of the survey. The adult most knowledgeable about the child's health is asked to respond to the survey. The survey asked about the physical, social and emotional health of children. The survey was conducted by the National Center for Health Statistics at the Centers for Disease Control and Prevention. The survey used the state and local area integrated telephone survey (SLAITS) methodology. State level data are available. Planning is underway for another National Survey of Child Health to be conducted in 2007. Documentation and reports are available at http://www.cdc.gov/nchs/about/major/slaits/nsch.htm

National Survey of Children with Special Health Care Needs: The National Survey of Children with Special Health Care Needs was a telephone survey conducted from October 2000 – April 2002. A random sample of households was selected and screened to identify children with special needs. The adult most knowledgeable about the selected child's health was asked to respond to the survey which collected information on health insurance, access to services, satisfaction with care and care coordination. The survey was conducted by the National Center for Health Statistics at the Centers for Disease Control and Prevention. The survey used the state

and local area integrated telephone survey (SLAITS) methodology. State level data are available. Another National Survey of Children with Special Health Care Needs is underway and data collection will be completed in 2006. Documentation and reports for the 2001 survey are available at http://www.cdc.gov/nchs/about/major/slaits/cshcn.htm Documentation and reports for the 2005-2006 survey are available at http://www.cdc.gov/nchs/about/major/slaits/cshcn_05_05.htm

National Vital Statistics Reports: The National Center for Health Statistics publishes periodic reports based on national birth and death data including annual reports summarizing trends in US births and deaths. Documentation and reports are available at http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/nvsr.htm

Pregnancy Risk Assessment Monitoring System (PRAMS): The Pregnancy Risk Assessment Monitoring System survey is an ongoing, population-based surveillance system sponsored by the Centers for Disease Control and Prevention (CDC) and the Washington State Office of Maternal and Child Health. PRAMS is designed to generate state-specific data for assessing health status and health care before, during, and after pregnancy. Some of the topics include prenatal care, pregnancy intention, multivitamin use, tobacco and alcohol use, physical abuse, breastfeeding, infant health care and infant sleep position. The information can be used for health and social services planning and policy development. Documentation and the questionnaire are described at http://www.doh.wa.gov/cfh/PRAMS/default.htm Additional detail is available at the CDC PRAMS webpage http://www.cdc.gov/reproductivehealth/srv_prams.htm

Smile Survey: The Washington State Smile Survey is conducted by the Department of Health every five years. During the most recent survey, thirty nine Head start or ECEAP sites and sixty-seven public elementary schools with a 2nd or 3rd grade were randomly selected across the state during the 2004-2005 school year. All preschool children enrolled and present on the day of the screening were included in the sample unless the parent returned a consent form specifically opting out of the sample. Elementary schools could choose to use either an active or passive consent process. Each child participating in the survey received an oral screening exam to determine the child's caries experience, treatment need and urgency, and dental sealants needs. Many counties chose to supplement this survey with an over sample or census of schools and/or Head Start/ECEAP sites in their county. More information on the Smile Survey is available at http://devwww/cfh/Oral_Health/index.htm

State and Local Area Integrated Telephone Survey (SLAlTS): This is a survey methodology for collecting state level health care data for program development and policy-making activities. The National Center for Health Statistics has employed this methodology for several national surveys, including the National Survey of Child Health, National Immunization Survey, and the National Survey of Children with Special Needs. Information about this methodology is available at http://www.cdc.gov/nchs/slaits.htm#Description

United States Census: Current Washington State census data are available from the Washington State Office of Financial Management at http://www.ofm.wa.gov/census2000/index.htm Current United States census data are available from the US Census Bureau at http://www.census.gov

VISTA: VistaPHw is a menu-driven software application that allows the user to analyze population-based health data for Washington. Data available in VistaPHw include vital statistics, hospital discharge data, sexually-transmitted disease data, tuberculosis data, and census

data. VistaPHw allows analysis of rates by age group, race, gender, time period, and geographic location. VistaPHw has been used for some analyses in this report because of the ease of use. In these cases, VistaPHw has been cited as the data source. Some minor differences between analyses using VistaPHw and Vital Statistics data files may occur due to differences in data definitions. Documentation on VistaPHw is available at http//www.doh.wa.gov/OS/Vista/HOMEPAGE.HTM

Washington State Population Survey: The Washington State Population Survey is a telephone survey of a random sample of Washington households which has been conducted every two years since 1998. The survey is coordinated by the Washington State Office of Financial Management. The survey focuses on employment, family poverty, in-migration, health and health insurance coverage. Additional information is available at http://www.ofm.wa.gov/sps/index.htm

Survey of Adolescent Health Behaviors: The Survey of Adolescent Health Behaviors in 2000 was a precursor to the current Healthy Youth Survey. The survey was conducted jointly by the Department of Social and Health Services, the Office of the Superintendent of Public Instruction, the Department of Community Trade and Economic Development, and the Department of Health Tobacco Program. The survey was administered during class time to public school students in grades 6, 8, 10 and 12. The sample was stratified by geographic region and school size, and within these cells, where possible, a school was selected from each of three community types: urban, suburban, and rural. All students in selected schools were invited to participate. The survey asked a variety of questions about alcohol, tobacco, and drug use and risk and protective factors.

Youth Risk Behavior Survey: The 1999 Washington State Youth Risk Behavior Survey (YRBS) was a precursor to the current Healthy Youth Survey based on the Centers for Disease Control and Prevention Youth Risk Behavior Survey instrument. The YRBS is intended to monitor adolescent health-risk behaviors that contribute to morbidity, mortality, and social problems among youth and adults in the United States. The Washington YRBS used a two-stage sampling design: schools were chosen using a probability-proportionate-to-size sampling of all public schools serving children grades 9-12 (which ensured that smaller schools had some chance of selection). Once schools were chosen, a random sample of classrooms was selected within participating schools. A sample of 4,022 adolescents in Washington State public schools participated in the YRBS 1999 survey. Alternative schools serving high-risk youth in the public school system were included. Based on four comparison items that were also administered to a census of eleventh graders in the state during achievement testing, results seemed to be representative of adolescents in public schools despite the low school participation rate (45%). Additional information on Washington's Youth Risk Behavior Survey is available at www.doh.wa.gov/EHSPHL/Epidemiology/NICE/publications/yrbs99.pdf The CDC YRBS webpage is http://www.cdc.gov/HealthyYouth/yrbs/index.htm

Technical Notes and Definitions

Confidence Interval: A confidence interval is a range of values that is used to describe the uncertainty around a point estimate of a quantity, for example, a mortality rate or the frequency of a particular behavior. Confidence intervals measure the variability in the data. Generally speaking, confidence intervals describe how much different the point estimate could have been if the underlying conditions stayed the same, but chance had led to a different set of data. Confidence intervals are calculated with a stated probability (say 95%), and we say that there is a 95% chance that the confidence interval covers the true value. Most confidence intervals are calculated as 95% confidence intervals because it's conventional and that is the level we use in this report. It is good to remember that the true population value is a constant, but its value is unknown. Thus, we calculate a confidence interval based on the sample of data we have available. If we had generated 100 confidence intervals, from taking 100 samples of data, each time the data would be slightly different and the confidence interval would be different. However, approximately 95 of the 100 confidence intervals would contain the true value. Confidence intervals do not account for bias resulting from missing or incomplete data, non-response to a survey, or poor data collection. This report provides confidence intervals for all survey data, including data from the Pregnancy Risk Assessment Monitoring System (PRAMS), the Healthy Youth Survey, the Behavior Risk Factor Surveillance System, the National Survey of Children's Health, the National Survey of Children with Special Needs, the National Immunization Survey, the Washington State Smile Survey and the Washington State Population Survey.

Much of this information was taken from the *Washington State Department of Health - Assessment Guidelines* (or http://www.doh.wa.gov/data/guidelines/ConfIntguide.htm) website.

International Classification of Disease (ICD) Codes: ICD codes are used to code hospitalization data in the Comprehensive Hospital Abstract Reporting System (CHARS) dataset and to code cause of death in the death certificate data. Hospitalization data use the ninth revision of the codes (ICD-9). Starting in 1999, mortality data switched from using ICD-9 to using the tenth revision of the codes (ICD-10). In order to view trends in Death Certificate data, comparability ratios (available from the National Center for Health Statistics) are used.

Medicaid Status: The source for the Medicaid designations used in this report is the First Steps Database (FSDB). FSDB uses three major Medicaid subgroups, determined by eligibility at the time of delivery: S Women Citizens, TANF, and Non-Citizens. In addition to these major groups, a small number of Medicaid women are eligible through other Medicaid programs, or receive services with eligibility type unknown.

- **S Women Citizens** – S Women citizens are Medicaid-eligible solely because of pregnancy (program S, excluding non-citizens). They have incomes at or below 185% of the Federal Poverty Level.
- **TANF -** Women on Temporary Assistance for Needy Families (TANF) receive cash grants in addition to medical coverage (program C or E). They generally have family incomes lower than 50% of the Federal Poverty Level.
- **Non-Citizens** – Non-Citizen women have incomes at or below 185% of the Federal Poverty Level, are Medicaid-eligible solely because of pregnancy, and are not legally

admitted for permanent residence in the United States. Non-Citizens are not eligible for TANF although their incomes are often lower than women on TANF.

In this report, Medicaid status is used as a proxy for socioeconomic status. From highest to lowest socioeconomic status the groups are: Non-Medicaid women, S Women, TANF and Non-Citizens. For additional information on the Medicaid groups, see First Steps Database description above or the First Steps website http://fortress.wa.gov/dshs/maa/FirstSteps/FSDB.htm

Race and Ethnicity: Rates in this report are presented by race and ethnicity because we observe disparities across these groups in Washington. Race/ethnic disparities are believed to reflect a mix of social, cultural and economic factors, not biology. One of the Healthy People 2010 goals is to reduce race/ethnic disparities and to monitor progress toward this goal, we must collect and present data by race/ethnicity. Current federal guidelines separate Hispanic ethnicity from race, and report on race and ethnicity separately. Federal guidelines also currently specify using five racial groups: White, Black or African American, Asian, Native Hawaiian or Pacific Islander, and American Indian or Alaska Native. We attempted to use a standard race/ethnicity coding system that followed the federal guidelines, but the data sources used in this report use five different grouping systems.

Data from the birth certificate use the federal guidelines and include the five race groups: White, Black, Asian, Native Hawaiian or Pacific Islander, and American Indian/Alaska Natives as well as a breakdown for Hispanics and Non-Hispanics. Data presented this way includes low birth weight, prenatal care, preterm delivery and smoking during pregnancy.

Washington State population files group Asians with Native Hawaiian or Pacific Islanders. Thus, the adolescent pregnancy, intentional injury, child mortality and unintentional injury chapters use four race groups and the Hispanic ethnicity breakdown.

The Healthy Youth Survey determines race/ethnicity from one question so data based on this survey can not analyze race separately from ethnicity. Data from the Healthy Youth Survey have 7 groups: White, Black, Asian, Pacific Islander, Native American, Hispanic and Other. These data include: asthma, child weight and physical activity, food insecurity and hunger, and mental health.

The Pregnancy Risk Assessment Monitoring System (PRAMS) samples respondents based on their race/ethnicity. Thus, data from PRAMS reports on the five sampled groups: Hispanics, and Non-Hispanic Whites, Non-Hispanic Blacks, Non-Hispanic Asian/Pacific Islanders, and Non-Hispanic American Indian/Alaska Natives. These data include alcohol use during pregnancy, perinatal behaviors and births from unintended pregnancies.

The 2005 SMILE Survey reports data on Non-Hispanic Whites, Non-Hispanic African Americans, Non-Hispanic Asians, Non-Hispanic Native Americans, and Hispanics.

Lastly, the National Survey of Children's Health and the National Survey of Children with Special Health Care Needs report data on Whites, Blacks, Multiple Race and Other.

Rates: A crude rate is the number of health events in a specified place and time period divided by the number of people at risk for the health event in the same place and time. For example, the Washington child mortality rate in 2003 is the number of Washington children ages 1-19 who died in 2003 divided by the total number of Washington children ages 1-19 in 2003. Rates are

usually multiplied by a constant such as 1,000 or 100,000 for ease of understanding, and are then reported as rate per 1,000 or rate per 100,000. Thus, child mortality is usually reported as deaths per 100,000 children 1-19 years. For additional information on calculating and interpreting rates, please see the Washington State Department of Health data guidelines at http://www.doh.wa.gov/Data/guidelines/Rateguide.htm

Rural/Urban Classification: Research has shown that there are differences in health status between residents of rural and urban Washington. Disparity data by urban or rural residence presented in this report uses the Rural Urban Commuting Area (RUCA) codes. This classification system developed by the US Department of Agriculture is based on census tract geography. Both population size and commuting relationships are used to classify census tracts. The RUCA codes used in this report are based on the 2000 census data.

Ideally, we would classify small areas such as census tracts or zip codes according to their RUCA classification and then proceed to compare health outcomes of the urban areas to the rural areas. Because the population data at this geographic level for 2001-2003 was not yet linked to RUCA codes, county level analysis was done and each county was assigned a RUCA code. The Washington State Office of Community and Rural Health developed a five-tiered consolidation of RUCA codes for general analyses of county-level data:

- **Urban / Urban fringe** - At least 75% of the county population in 2000 resided in urbanized census tracts.
- **Mixed Urban** – Between 50% and 75% of the county population in 2000 resided in urbanized census tracts or tracts where more than 30% of the commuter flow was to an urbanized area
- **Large Town Rural** – At least 75% of the county population in 2000 resided in a large town census (10,000 to 49,999) tract or tracts where more than 30% of the commuter flow was to a large town area
- **Mixed Rural** – Between 50% and 75% of the county population in 2000 resided in a large town (10,000 to 49,999) or small town (no town over 9,999) census tract or tracts where more than 30% of the commuter flow was to these areas
- **Small town rural** - At least 75% of the county population in 2000 resided in a small town or isolated (no town over 9,999) census tract or tracts where more than 30% of the commuter flow was to a small town area

For more information on Rural-Urban classifications, see the USDA site at http://www.ers.usda.gov/briefing/Rurality/RuralUrbanCommutingAreas/

More information on the RUCA system is also available at: http://www.doh.wa.gov/Data/Guidelines/RuralUrban.htm#4tier

Small numbers: To protect confidentiality in this report, rates are not presented if the number of health events was five or less. To prevent the need to suppress a lot of rates, where possible we have combined three years of data for the sub-group analyses: county, age, race/ethnicity and rural/urban classification. The interpretation of data based on small numbers is another concern. Small numbers primarily affects the county-specific rates, and can lead to instability of rates even when three years of data are used. We have provided county population data in the first

section of the report and encourage readers to look at the population sizes and estimate the number of events prior to using the data for policy and program planning.

Unintended Pregnancy: The percent of pregnancies which are unintended. Unintended pregnancy attempts to count the proportion of all pregnancies that were not intended at the time of conception. The only Washington State data available to assess intention are data from the Washington State Pregnancy Risk Assessment Monitoring System (PRAMS). In PRAMS, to determine pregnancy intention, women are asked 2-6 months after delivering a live birth how they felt about becoming pregnant when they first learned of their pregnancy. Women can respond they wanted to be pregnant sooner, later, at that time or they didn't want to be pregnant then or at any time. Responses that the woman wanted to be pregnant later or not at any time are considered unintended. In addition, all abortions are considered unintended pregnancies. The unintended pregnancy rate is calculated as follows. The numerator is [(the estimated percentage of unintended pregnancies from PRAMS) *(resident live births)] + reported resident abortions. The denominator is the number of resident live births + reported resident abortions. Birth and Abortion data are obtained from the Washington State Center for Health Statistics Birth and Abortion files for 2001-2003.

There are several concerns with the unintended pregnancy measure. First, information on intention is only collected from some pregnancies (live births) and not from fetal deaths, abortions or other pregnancy outcomes. Second, the reported pregnancy intention may vary depending on when in relation to the pregnancy it is asked. Third, the concept of intending or planning pregnancies may be influenced by cultural perceptions around pregnancy and the life course.